

REMARKS

In the Office Action, the Examiner rejected claims 1-26. In the present response, Applicants have amended claims 1, 15 and 17 and provided at least some of the distinctions between the references cited by the Examiner and the claimed subject matter. Accordingly, Applicants respectfully request reconsideration of the pending claims 1-26.

Interview Summary

In an interview on November 27, 2006, which was conducted with the undersigned, the rejections and claimed subject matter were discussed with the Examiner. Applicants appreciate the Examiner's explanation and discussion of the rejections and cited references. Accordingly, in view of this consultation, Applicants have amended claims 1, 15 and 17 and provided arguments to further clarify at least some of the distinctions of the claimed subject matter in view of the prior art.

Amendment to Claims 1, 15 and 17

To clarify the claimed subject matter, Applicants have amended claims 1, 15 and 17. In particular, claims 1 and 15 have been amended to replace the phrase "application of pressure to said valves" with the phrase "application of fluid pressure to said valves." Further, claim 17 has been amended to replace the phrase "application of pressure to the combination of two or more valves" with the phrase "application of fluid pressure to the combination of two or more valves." These amendments are not believed to add any new matter and are fully supported in the present application. *See id., e.g.*, at FIGs. 1-5; page 4, para. 0011 to page 7, para. 0013; page 10, para. 0026 to p. 25, para. 0059. Accordingly, Applicants respectfully request entry of these amendments.

First Rejection under 35 U.S.C. § 102

In the Office Action, the Examiner rejected claims 1, 2, 4, 5, 8-11, 13, 14, 17-19, 21-24 and 26 under U.S.C. § 102 (b) as being anticipated by U.S. Patent

Application No. 5,326,458 to Johnson, which is herein referred to as "Johnson." Applicants respectfully submit that this reference does not disclose the claimed subject matter.

To begin, Johnson describes a skimming system having a float/filter assembly and a pump is used to pump fluids that are lighter than water to the surface. *See* Johnson, Abstract; col. 2, lines 5-67. In Johnson, the float/filter assembly 13 and pump 31 are coupled to a pump source of compressed air. *See id.* at Fig. 1, col. 3, line 65 to col. 4, lines 44. The compressed air is provided to pump 31, which may include one or two pump heads, such as pump heads 115 and 138. *See id.* In the pump heads 115 and 138, springs 120 and 144 are used to provide the force to draw oil and water into the respective portions of the pumps through the check valves 122 and 146. *See id.* at Figs. 3-5, col. 5, line 26 to col. 6, line 40. The compressed air is provided from the pump source to force the springs into a compressed state, which seats the check valves 120 and 146 to block the oil and water from entering the pumping assembly. *See id.*

In the rejection, the Examiner asserted that the Johnson reference discloses all of the claimed subject matter. In particular, the Examiner asserted that check valves 122 and 146 correspond to the claimed "two or more valves." However, Applicants submit that the cited reference fails to provide all of the claimed subject matter. For instance, Johnson fails to provide "two or more valves wherein said valves operate over a designated pressure interval and are arranged to independently actuate performance of a sequenced set of events by one or more downhole tools based on the application of fluid pressure to said valves," as recited in claim 1. Further, Johnson fails to disclose "a combination of two or more valves arranged within sub-assemblies wherein one sub-assembly communicates with another sub-assembly through pressure isolating connections, and wherein the combination of two or more valves independently actuate performance of the sequenced set of events by one or more downhole tools based on an application of fluid pressure to the combination of two or more valves," as recited in claim 17. Hence, the Johnson reference fails to disclose the claimed subject matter.

Applicants submit that Johnson does not disclose valves that actuate performance of a sequenced set of events by downhole tools based on the application of fluid pressure. In Johnson, springs 120 and 144 provide the force to draw the water and oil into the pump assembly. *See id.* at col. 5, lines 26-34. Indeed, the check valves 122 and 146 of Johnson are opened by the springs 120 and 144 and closed by the compressed air, respectively. Further, as noted above, the check valves 122 and 146 of Johnson are components of the pump 31. The check valves 122 and 146 do not appear to actuate any events by other downhole tools, much less a sequenced set of events by downhole tools based on the application of fluid pressure. As such, Johnson does not provide valves that actuate a sequenced set of events by downhole tools with the application of fluid pressure. Hence, the Johnson reference does not disclose the claimed subject matter.

Accordingly, in view of the remarks set forth above, Applicants respectfully submit that the Johnson reference does not anticipate the claimed subject matter. Therefore, Applicants respectfully request the Examiner to withdraw the rejection and allow the pending claims 1, 2, 4, 5, 8-11, 13, 14, 17-19, 21-24 and 26.

Second Rejection under 35 U.S.C. § 102

In the Office Action, the Examiner rejected claims 1-3, 12, 17 and 25 under U.S.C. § 102 (b) as being anticipated by U.S. Patent Application No. 3,033,286 to Fast et al., which is herein referred to as "Fast." Applicants respectfully submit that this reference does not disclose the claimed subject matter.

In the rejection, the Examiner asserted that the Fast reference discloses all of the claimed subject matter. In particular, the Examiner appears to assert that the valves 52 and 54 of Fast correspond to the "two or more valves." However, the cited reference fails to provide all of the claimed subject matter. For instance, Fast fails to provide "two or more valves wherein said valves operate over a designated pressure interval and are arranged to independently actuate performance of a sequenced set of events by one or more downhole tools based on the application of fluid pressure to

said valves," as recited in claim 1. Further, Fast fails to provide "a combination of two or more valves arranged within sub-assemblies wherein one sub-assembly communicates with another sub-assembly through pressure isolating connections, and wherein the combination of two or more valves independently actuate performance of the sequenced set of events by one or more downhole tools based on an application of fluid pressure to the combination of two or more valves," as recited in claim 17. Hence, the Fast reference fails to disclose the claimed subject matter.

To begin, Fast describes a method and apparatus for testing the productivity of formations encountered during drilling of a well. *See* Fast, Abstract; col. 2, lines 9-12. In Fast, an elongated pressure chamber 10 is lowered into a well via a wire line 11. *See id.* at col. 2, lines 7-17. To provide stimulation treatments before the testing, a pressure chamber 10' includes an outlet valve 54 and a frangible diaphragm 52. *See id.* at Fig. 2, col. 4, lines 42-68; col. 5, line 33 to col.6, line 8. An explosion cap 65 is detonated in the pressure chamber 10' to rupture the frangible diaphragm 52, which releases the treating fluid through the outlet valve 54. *See id.* at col. 6, lines 39-56. As such, Fast describes a method for providing treating fluid by rupturing the frangible diaphragm.

Applicants submit that Fast does not disclose the claimed valves and that Fast does not actuate performance of a sequenced set of events by downhole tools based on the application of fluid pressure. First, Applicants submit that the frangible diaphragm 52 of Fast does not correspond to a valve. Indeed, the frangible diaphragm 52 is described as being able to withstand differential pressure in one direction, but failing or breaking with a smaller differential pressure from the other direction. *See* Fast, col. 5, lines 7-31. That is, the frangible diaphragm 52 appears to relate to a burst disk that ruptures, which is similar to the "burst disk" recited in claims 12 and 25. Applicants note that the "burst disk" is not a valve. As such, Applicants submit that the frangible diaphragm does not correspond to a valve.

With regard to the second point, Fast does not actuate performance of a sequenced set of events by downhole tools based on the application of fluid pressure.

In Fast, the frangible diaphragm 52 is ruptured as a result of the detonation of an explosion cap 65, which is detonated based on electrical current provided to the explosion cap 65. While this detonation does break the frangible diaphragm 52, it does not actuate performance of a sequenced set of events, but simply forces the treating fluid through an outlet valve 54. Further, it appears that the outlet valve 54 of Fast is opened by rotation of the drill string prior to the detonation to provide a flow path for the treating fluid. *See id.* at col. 5, lines 35-39. As such, Fast does not appear to apply fluid pressure to valves to actuate performance of a sequenced set of events by downhole tools. Hence, the Fast reference does not disclose the claimed subject matter.

Accordingly, in view of the remarks set forth above, Applicants respectfully submit that the Fast reference does not anticipate the claimed subject matter. Therefore, Applicants respectfully request the Examiner's withdraw the rejection and allow the pending claims 1-3, 12, 17 and 25.

First Rejection under 35 U.S.C. § 103

The Examiner rejected claims 6, 7 and 20 under 35 U.S.C. § 103 (a) as being unpatentable over Johnson in view of U.S. Patent No. 6,131,655 to Shaw, which is herein referred to as "Shaw." Applicants respectfully submit that Johnson and Shaw, alone or in combination, do not disclose or teach the claimed subject matter.

Claims 6, 7 and 20 depend from independent claims 1 and 17, respectively, and are believed to be patentable based on their respective dependence. In the rejection, the Examiner asserted that the Johnson reference discloses all of the claimed subject matter, but does not expressly teach that the valves operate one or more remote electrical devices that communicate with a command base with, or without, a wireline. In an attempt to cure this deficiency, the Examiner relied on the Shaw reference. However, the Shaw reference is directed to a system for separating fluids of different densities into different fluid streams from an underground well. *See Shaw*, Abstract, col. 1, lines 10-17. Shaw describes the use of a first pump 44 and a second pump 56 along with a separator 72 to separate oil from water and inject water

through the separator 72 into another portion of the well. *See id.* at col. 5, line 9 to col. 6, line 61. Shaw further describes that the pumps 44 and 56 may use batteries for the pumps and wireless devices to communicate with the downhole components. *See id.* at col. 15, lines 42-60. Clearly, Shaw does not provide or suggest the use of two or more valves to actuate performance of a sequenced set of events by downhole tools based on the application of fluid pressure to the valves. Indeed, the pumps in Shaw appear to operate from motors supplied electrical current via batteries or provided from the surface via a cable. Thus, because Shaw does not disclose the recited features of independent claims 1 and 17, the Shaw reference fails to cure the deficiencies of Johnson.

Accordingly, in view of the remarks set forth above, Applicants respectfully submit that the Johnson and Shaw references cannot support a *prima facie* case of obviousness. Therefore, Applicants respectfully request the Examiner to withdraw the rejection and allow the pending claims 6, 7 and 20.

Second Rejection under 35 U.S.C. § 103

The Examiner rejected claims 15 and 16 under 35 U.S.C. § 103 (a) as being unpatentable over U.S. Patent No. 5,704,426 to Rytlewski, which is herein referred to as "Rytlewski," in view of U.S. Patent No. 3,237,695 to Bostock et al., which is herein referred to as "Bostock." Applicants respectfully assert that Rytlewski and Bostock do not disclose or teach the claimed subject matter.

In the rejection, the Examiner asserted that the Rytlewski reference discloses all of the claimed subject matter, but does not expressly teach that at least one of said steps is actuated by a system of valves that operates over a designated pressure interval and is each arranged to actuate performance of said step with the application of pressure to said valves. In an attempt to cure this deficiency, the Examiner relied on the Bostock reference. However, the cited reference fails to cure the deficiencies of Rytlewski. For instance, the cited references fail to provide or teach "positioning said BHA within said wellbore and activating said sealing mechanism so as to establish a hydraulic seal below said at least one perforated interval," as recited in

claim 15. Further, the cited references fail to provide or teach "pumping a treating fluid down the annulus between said tubing string and said wellbore and into the perforations created by said perforating device, without removing said perforating device from said wellbore," as recited in claim 15. Finally, the cited references fail to provide or teach "wherein at least one of said steps is actuated by a system of valves that operates over a designated pressure interval and is arranged to actuate performance of said step based on the application of fluid pressure to said valves," as recited in claim 15. Hence, the cited references, alone or in combination, cannot render the claimed subject matter obvious.

With regard to the first point, the references, alone or in combination, fail to provide or suggest forming a hydraulic seal below the perforations. To begin, the Examiner appears to rely upon certain passages associated with Figs. 14a-14d of Rytlewski to correspond to the claimed subject matter. In these passages of Rytlewski, a resettable plug 158 is utilized with perforating guns 152, 154 and 156. *See id.* at col. 11, lines 34-44. The resettable plug 158 and perforating guns 152, 154 and 156 are set at different intervals to perforate the respective intervals. *See id.* at col. 11, line 50 to col. 12, line 29. In particular, the reference describes perforating a zone 160, moving the zonal isolation apparatus 150 above the perforations 160, and setting a plug/tubing plug 158 directly above the perforations 160. *See id.* at Fig. 14a-14b; col. 11, lines 50-61. That is, the passage of Rytlewski teaches forming a sealed area above the perforations, not below the perforated interval. As such, Rytlewski fails to teach the forming a hydraulic seal below the perforated interval.

While the Examiner does not rely upon Bostock, Bostock fails to cure the deficiencies of Rytlewski. Bostock describes a well packer that is disposed between a well casing and a flow conductor. *See Bostock*, col. 1, lines 9-22. In Bostock, a well packer 20 includes an upper valve 124 and a lower valve 191 that are used to form a seal between the well casing and a string of tubing. *See id.* at col. 5, lines 37-40; col. 6, lines 33-39. However, Bostock does not disclose or teach forming a hydraulic seal below the perforations. Indeed, the reference does appear to suggest forming

perforations. Accordingly, as Bostock fails to provide the claimed subject, the reference fails to cure the deficiencies of Rytlewski.

With regard to the second point, the references, alone or in combination, fail to provide or suggest pumping a treating fluid down the annulus between the tubing string and the wellbore into the perforations. In the rejection, the Examiner relied upon a passage that describes stimulating operations. *See id.* at col. 1, lines 5-17. However, the passage does not mention pumping the treating fluid down the annulus. Indeed, as discussed above, the setting of the plug 158 above the perforations 160, as described in Rytlewski, appears to prevent this use of the annulus to provide the treating fluid to the perforations. As such, Applicants submit that Rytlewski fails to provide or teach the claimed subject matter.

Furthermore, while the Examiner does not rely upon Bostock, Bostock fails to cure the deficiencies of Rytlewski. Again, as noted above, Bostock describes a well packer that is disposed between a well casing and a flow conductor. Nothing in the Bostock reference appears to suggest pumping treating fluid, much less pumping treating fluid down the annulus between the tubing string and the wellbore into the perforations. Accordingly, as Bostock fails to provide the claimed subject, the reference fails to cure the deficiencies of Rytlewski.

With regard to the third point, the references fail to disclose the valves that actuate the performance of a step based on the application of fluid pressure. Because the Examiner admitted that the Rytlewski reference does not expressly teach that at least one of said steps is actuated by a system of valves that operates over a designated pressure interval and is arranged to actuate performance of said step with the application of pressure to said valves, the Bostock reference has to provide this claimed subject matter for the rejection to stand. However, the Bostock reference does not disclose the application of pressure to a system of valves to actuate performance of one of the steps. Again, Bostock describes a well packer that is disposed between well casing and a flow conductor. *See Bostock*, col. 1, lines 9-22. In Bostock, the upper valve 124, which is movable downward through the release

sleeves 136 when the shear pin 126 is sheared, and the lower valve 191, which is releasable secured by shear pin 191, are part of the well packer 20. *See id.* at col. 5, lines 37-40; col. 6, lines 33-39. Fluid under pressure is introduced into the string of tubing to force the upper tubular valve downward to shear the shear pin 126. *See id.* at col. 8, lines 5-15. The valves 125 and 191 are used in Bostock to seal the annulus between the well casing C and string of tubing 30. That is, the valves 124 and 191 of Bostock perform the actual inflation of the well packer 20, but do not use the application of fluid pressure to actuate performance of a step. As such, the Bostock reference does not cure the deficiencies of the Rytlewski reference.


Accordingly, in view of the remarks set forth above, Applicants respectfully submit that the Rytlewski and Bostock references cannot support a *prima facie* case of obviousness. Therefore, Applicants respectfully request the Examiner to withdraw the rejection and allow the pending claims 15 and 16.

CONCLUSION

In view of the remarks and amendments set forth above, Applicants respectfully request reconsideration and allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

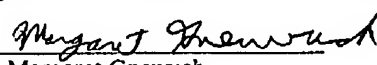
Respectfully submitted,

Date: February 13, 2007


Brent R. Knight, Reg. No. 54,226
ExxonMobil Upstream Research Company
P. O. Box 2189 (CORP-URC-SW 337)
Houston, TX 77252-2189
(713) 431-4563 Phone

Certificate of Facsimile Transmission

I hereby certify that this correspondence is being transmitted via facsimile to Examiner Bomar, Technology Center 3600, United States Patent and Trademark Office at (571) 273-8300 on February 13, 2007.


Margaret Gnewuch